



HIDRORENGKAH MINYAK GORENG BEKAS DENGAN MENGUNAKAN KATALIS Cr/BENTONIT

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INTISARI

Telah dilakukan preparasi, karakterisasi, dan uji aktivitas Cr/Bentonit untuk hidrorengkah minyak goreng bekas. Na/bentonit diaktivasi dengan H_2SO_4 1 M sehingga diperoleh H/bentonit. Preparasi katalis Cr dilakukan dengan metode impregnasi larutan garam prekursor $Cr(NO_3)_3 \cdot 9H_2O$ pada sampel H/bentonit, dilanjutkan dengan kalsinasi dan reduksi, sehingga diperoleh katalis Cr/bentonit. Cr/Bentonit yang diperoleh dikarakterisasi dengan FT-IR, Difraktometri Sinar-X (XRD), dan *Surface Area Analyzer*. Katalis Cr/Bentonit digunakan untuk hidrorengkah minyak goreng bekas dengan variasi rasio katalis/umpan 1/10, 1/15, 1/20 pada suhu $450^\circ C$ dan laju alir H_2 20mL/menit selama 1 jam. Produk hidrorengkah dianalisis dengan GC-MS untuk mengetahui kandungan dan komposisi senyawanya.

Hasil penelitian menunjukkan bahwa terjadi penurunan luas permukaan disaat aktivasi dan setelah diimpregnasi logam Cr dari $47,30 m^2/g$ menjadi $19,76 m^2/g$. Senyawa yang terkandung dalam produk hidrorengkah adalah asam dodekanoat, 9-asam heksadekanoat, dan 9-asam oktadekanoat.

Kata kunci: Cr/Bentonit, Hidrorengkah, minyak goreng bekas



HYDROCRACKING OF USED COOKING OIL CATALYZED BY Cr-BENTONITE

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ABSTRACT

Preparation, characterization and catalytic activity testing of Cr-bentonite for the hydrocracking reaction of used cooking oil have been done. Cr-bentonite preparation began by reacting Na-bentonite with 1 M H_2SO_4 to obtain of the H-bentonite. Cr-bentonite catalyst preparation was performed through impregnation of $Cr(NO_3)_3 \cdot 9H_2O$ into H-bentonite, followed by calcination and reduction, in order to obtain Cr-bentonite catalyst. Cr/bentonite obtained was then characterized by FT-IR spectrophotometry, X-ray diffractometry (XRD), porosimetry methods. Cr/bentonite catalyst which was used for hydrocracking of used cooking oil with variation ratio of catalyst/feed 1/10, 1/15, 1/20 at a temperature of $450^\circ C$ and the flow rate H_2 of 20 mL/minute for 1 hour. Hydrocracking product were analyzed by GC-MS to determine the content and composition of the compounds.

The results showed that the catalyst preparation did not affect the structure of bentonite, however caused a decrease in surface area of bentonite as a result of activation and after Cr impregnation from $47.30 m^2/g$ to $19.76 m^2/g$. Hydrocracking experiment demonstrated that compounds contained in the hydrocracking products were dodecanoic, 9-hexadecenoic acid, and 9-octadecanoic acid.

Keywords: Cr/bentonite, hydrocracking, used cooking oil